

Si MAS-NMR hydration and compressive strength study in cement paste

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Abstract: ^{29}Si MAS-NMR measurements of cement have been used to follow the hydration process in cement pastes. Samples prepared using a w/c ratio 0.45 and Type 1 cement have been cured at temperatures over the range 20 to 55°C with curing times of 3 to 28 days. Compressive strength values for samples subjected to the same time/temperature curing regime were also obtained. The compressive strength is found to show a linear dependence on hydration as characterized in terms of the NMR Q0, Q1 and Q2 silicate polymerization states. Solid state ^{29}Si NMR measurements appear promising as a means of monitoring cement/concrete strength